

REMARKS

Claims 14 and 15 have been added. Claims 1, 3 and 8-15 are pending.

Claim Rejections – 35 USC 103

Claims 1, 3, 8-10 and 12-13 were rejected under 35 USC §103(a) as allegedly being unpatentable over Prior art figures 9A-9B in view of Ozimek et al. (5,382,310), Toshiba KK[Toke] (JP 07225391A), Hirose et al. (5,898,218) and Sasano (US 6,313,525 B1). As discussed below, the Applicants respectfully disagree.

The Law of Obviousness

A claimed invention is unpatentable due to obviousness if the differences between it and the prior art “are such that the subject matter as a whole would have been obvious at the time the invention was made to a person of ordinary skill in the art.” 35 U.S.C. §103(a).

As discussed by the Court of Appeals for the Federal Circuit, a proper conclusion of obviousness under 35 U.S.C. §103 requires that there be some motivation in the prior art that suggests the claimed invention as a whole:

[A]n Examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be “an illogical and inappropriate process by which to determine patentability.” [Citations omitted] To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to show motivation to combine the references that create the case of obviousness.

In re Rouffet, 149 F.3d 1350, 1357; 47 U.S.P.Q.2d 1453, 1457-1458 (Fed. Cir. 1998). As further explained by the Federal Circuit:

Our case law makes clear that the best defense against hindsight-based obviousness analysis is the rigorous application of the requirement for a showing of a teaching or motivation to combine the prior art references. *See Dembiczak*, 175 F.3d 994, 999, 50 U.S.P.Q.2d 1614, 1617. “Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor’s disclosure as a blueprint for piecing together the prior art to defeat patentability--the essence of hindsight.” *Id.*

“When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references.” *In re Rouffet*, 149 F.3d 1350, 1355, 47 U.S.P.Q.2d 1453, 1456 (Fed. Cir. 1998) (citing *In re Geiger*, 815 F.2d 686, 688, 2 U.S.P.Q.2d 1276, 1278 (Fed. Cir. 1987)).

Ecolochem, Inc. v. Southern California Edison Co., 56 U.S.P.Q.2d 1065, 1072-73 (Fed. Cir. 2000). The showing of the motivation to combine must be “clear and particular.” *See, e.g., C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340, 1352, 48 U.S.P.Q.2d 1225, 1232 (Fed. Cir. 1998); *Teleflex, Inc. v. Ficosa North Am. Corp.*, 63 U.S.P.Q.2d 1374, 1387 (Fed. Cir. 2002).

The Claimed Subject Matter is Patentable Over the Cited References

In the present case, not only is there no “clear and particular” motivation to combine. It is contended in the Office Action that it would have been obvious to one of ordinary skill in the art to modify the device structure of applicants alleged Prior Art (AAPA) Figures 9A-9B, by incorporating the adhesive of Ozimek, the light shielding adhesive resin of Toshiba, the via hole of Hirose and the glass plate, adhesive resin and external connection of Sasano to maintain air tightness.

The Applicants submit that the conclusion of obviousness is in error and that the Examiner has applied improper hindsight by using the applicant’s own disclosure as a blueprint to reconstruct the invention by selecting various features from each of the cited references. The required “clear and particular” motivation to combine the references is lacking.

It is asserted in the Office Action that it would have been obvious to modify the device of the AAPA to obtain “an external connecting terminal provided on a back surface of the supporting substrate and electrically connected to the conductive pattern through the substrate” as recited in claim 1 of the present invention. Applicants respectfully assert that there is no teaching or suggestion to modify the device of AAPA to arrive at the claimed invention.

The AAPA (FIGS. 9A-9B) shows a device that includes a substrate 1, a chip 5, external connecting terminal 2 coupled to the chip, and a ceramic cap 3 that covers the chip and provides a hollow airtight portion 7 between the substrate and the ceramic cap 3. The device of the AAPA includes a technique for preparing leads 2 that involves bending the leads of a lead frame at a right angle above the substrate. (See FIG. 9B and page 1, lines 18-24 of the background section of the present application). In the description of the AAPA, a problem with the known techniques relates to the inability to view the state of the chip. (See page 2, lines 5-10 of the background section of the current application) The AAPA describes the conventional device as being sealed in an airtight space 7, so maintaining air tightness is not a problem in the art in this case. Modifying the device of the AAPA to include “an external connecting terminal provided on a back surface of the supporting substrate and electrically connected to the conductive pattern through the substrate” does not solve or even alleviate the problem with visual inspection of the chip. Thus, there is no teaching or suggestion to modify the AAPA for at least this reason.

The Hirose reference shows (FIG. 1) a device 1 with an external connection 14 provided through a substrate 10, and a ceramic cap 9 over the device. The Hirose reference is silent regarding providing visual inspection of a chip as mentioned in the AAPA. On the contrary, the use of a ceramic cap 9 over the device prevents the visual inspection of the device. There is simply no teaching or suggestion in the references to modify the AAPA to provide an external connection through the substrate. That is, the AAPA already provides an external connection to the chip using a connecting terminal 2. Such a proposed modification would not solve the problem involving visual inspection of the chip. In addition, the use of a ceramic cap 9 over the

device prevents the visual inspection of the device and would discourage one skilled in the art to combine the teachings of the Hirose reference with AAPA. Indeed, modifying the AAPA as proposed in the Office Action would impair the manufacturing process involving the use of a lead frame as disclosed in the AAPA.. Thus, one skilled in the art would not have been motivated to modify the AAPA to arrive at the claimed invention.

Further, Hirose discloses an external terminals provided at a side surface of the supporting substrate. If the external terminal is provided at the side face of the supporting substrate then weld flash may occur at the external terminal at the time of dicing. In contrast, the present invention recites, in claims 1 and 8, that the external terminal is provided on the back surface.

The Sasano reference shows (FIG. 1) a device having a transparent sealing plate 9 bonded to the upper surface of the package body 1 through transparent adhesive 10 (column 5, lines 57 to 61). It is pointed out in the Office Action points that the Sasano patent provides an air-tight body 1. (Column 3, lines 12-21). However, the AAPA does not mention air tightness as being a problem in the art. To the contrary, the AAPA describes the prior art device as providing an air-tight space. (*See* page 1, lines 12-17 of the background section of the current application). Thus, one skilled in the art would not have been motivated to combine the teachings of Sasano with the AAPA to provide an air tight space.

The Ozimek reference (FIG. 1, for example) does not disclose a hollow air tight portion as disclosed in the AAPA and the Sasano reference. The Ozimek reference has a structure that is fundamentally different from AAPA and Sasano in this regard. Thus, one skilled in the art would not be motivated to combine the Ozimek reference. with either AAPA or Sasano.

The liquid crystal display (LCD) structure of the Toshiba invention is so dissimilar with Sasano's hollow package structure or the structure of applicants Figs 9A and 9B that a person of ordinary skill in the art would not have been led or motivated to combine the disclosure of Toshiba with either Sasano or the admitted prior art. Even if the references are combined, there

is no suggestion or teaching in any of the prior art references to use the light shielding adhesive resin as claimed in claim 1. Claims 1 and 3 are thus non-obvious for the foregoing reasons.

Claim 3 depends from claim 1 and should be allowable for at least same reason as claim 1 above. Furthermore, claim 3 should be allowable for at least the following additional reasons. None of the references teaches or suggests a fuse element as recited in claim 3. For example, FIGS. 9A-9B of the AAPA show a bonding wire 6 between chip 5 and connections terminal 2. FIG. 1 of the Sasano patent shows a connecting wire 8 between device 7 and terminal 4. The Hirose patent shows in FIG. 1 a condenser 7 connected to conductor 14 but fails to disclose any type of bonding wire let alone a fuse element. The Toshiba patent fails to shows any type of bonding wire or fuse element. Thus, none of the references teaches or suggests claim 3 of the present invention.

Claim 12 depends from claim 1 and should be allowable for at least the same reasons as claim 1.

Claim 8 includes features similar to claim 1. For the reasons explained above for claim 1, claim 8 should be allowable. Since claims 11 and 13 depend from claim 8, claims 11 and 13 should be allowable for at least the same reasons.

New claims

Claims 14 and 15, which depend from claims 12 and 13 respectively, have been added. Claims 14 and 15 recite a via hole that “extends substantially straight between an internal surface and an external surface of the substrate.” Support for these claims can be found in the specification and drawings of the current application. No new matter has been added.

Claims 14 and 15 should be allowable for at least the same reasons as claims 1 and 8 respectively. In addition, none of the prior art references teaches or suggests the features of claims 14 and 15 for the following additional reasons. For example, Fig. 1 of the Hirose patent

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shows a via hole having a non-straight shape and not as recited in claim 14 and 15. Moreover, Toshiba, Sasano, Ozimek and the AAPA fail to disclose a via hole.

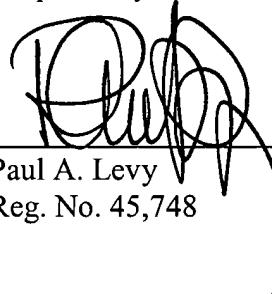
Conclusion

All pending claims are in condition for allowance.

The prior art made of record has not been considered because the references were not cited against any of the claims.

Enclosed is a \$110 check for the one-month Petition for Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,



Paul A. Levy
Reg. No. 45,748

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Fish & Richardson P.C.
45 Rockefeller Plaza, Suite 2800
New York, New York 10111
Telephone: (212) 765-5070
Facsimile: (212) 258-2291